

NATURAL RESOURCES CONSERVATION SERVICE  
**GRAZING LAND MECHANICAL TREATMENT (ACRE)**  
**CODE 548**  
**MONTANA CONSERVATION PRACTICE SPECIFICATION**

**DEFINITION:** Performing tillage operations that create random roughness of the soil surface.

**SPECIFICATIONS APPLICABLE TO ALL TREATMENTS:** A Grazing Land Mechanical Treatment plan shall include the following information:

1. Location—Field numbers and map or sketch of areas treated and areas excluded.
2. Acres and how determined.
3. Site condition, including soils, ecological sites, slope, species composition, similarity index, and production of existing vegetation.
4. Desired and expected vegetation composition and production after treatment.
5. Method of treatment and type of equipment.
6. Date(s) of practice application.
7. Spacing, width, and depth of treatment.
8. Planned percent control of undesirable target vegetation.
9. Soil protection provided during establishment period.
10. Special considerations.
11. Date and signature.

Refer to **TABLE 1. Guide to Treatment Selection by Dominant Range Site** to determine the most appropriate treatment for site conditions and resource concerns.

- Optimum treatment dates are during late fall or early spring when moisture conditions are adequate.
- For best results at least one key rhizomatous forage plant per square yard must exist over the majority of the area to be treated.
- Mechanical treatments shall not interfere with trafficability, such as emergency fire lanes, stock loafing and trailing areas, etc. However, this practice can be used to control unwanted vehicular traffic.
- Clip weeds or apply herbicides, if necessary, to control competing or undesirable vegetation. Refer to Field Office Technical (FOTG), Section IV—Practice Standards and Specifications, 595-Pest Management.
- Compliance with all applicable federal, state and local laws and regulations, including permits, permissions, or notifications is required.

## **Specification MT548-2**

### **ADDITIONAL SPECIFICATIONS APPLICABLE TO CONTOUR FURROWING AND CONTOUR SCALPING:**

- Equipment to be used is a modified lister plow, with or without seeder.
- Furrows will be constructed on the approximate contour. Natural dams to control erosion will be left within each furrow by lifting the machine out of the ground for a short distance at random intervals, not to exceed 300 feet.
- Contour furrows will be at a depth of 4 to 10 inches.
- Contour scalping will be at a depth of 2 to 4 inches. Scalping width will be 18 to 28 inches.
- Furrows must be at least 6 inches and not more than 30 inches wide.
- Spacing between contour furrows should be based on the size of the furrow cross section (furrow depth x width):
  - > 12–16 inch cross section:  $\leq 2$  feet
  - > 17–25 inch cross section:  $\leq 3.5$  feet
  - > 26–48 inch cross section:  $\leq 5$  feet
- Spacing is correct if the sod removed from the furrows covers the majority of the area between them.
- On exceptionally low condition rangelands, seeding may be desired into the furrows.

### **ADDITIONAL SPECIFICATIONS APPLICABLE TO PITTING:**

- Suitable equipment includes a modified disk plow with pitter, rotary drum pitter, or rotary subsoiler.
- Pits will be approximately 16 inches apart and not less than 3 inches deep.

### **ADDITIONAL SPECIFICATIONS APPLICABLE TO CHISELING:**

- Equipment will be standard chisel plow having straight chisel shanks, twisted shanks, or 6-inch shovels (sweeps). (Refer to **TABLE 1**.)
- Depth of treatment will be from 4 to 6 inches deep.
- Distance between chisels shall not exceed 18-inch centers. (Centers from 12 to 14 inches are preferred.)
- Not more than 50% of the existing vegetation shall be destroyed by the treatment.
- Optimum treatment dates are during late fall or early spring when moisture conditions are adequate.
- No seeding is recommended with this treatment.

**ADDITIONAL SPECIFICATIONS APPLICABLE TO DISKING OR OTHER RENOVATION:**

- Suitable equipment includes offset disk, chisel plow with twisted shanks, or similar equipment.
- Operations will be on the approximate contour.
- Two operations may be required for adequate results.
- Depth of treatment will be from 3 to 6 inches.
- At least 50 percent of the existing undesirable vegetation should be destroyed.
- Seeding is generally recommended with this treatment.

**ADDITIONAL SPECIFICATIONS APPLICABLE TO DEEP RIPPING:**

- Suitable equipment includes a construction ripper or agricultural type subsoiler capable of penetrating the soil to a depth of at least 16 to 20 inches.
- Operations will be on the approximate contour.
- Spacing between the ripping will not exceed 4 feet.

**POST TREATMENT MANAGEMENT:**

- The treated area will have complete protection from grazing by domestic livestock from the date of treatment until October 1 during the first year and from green-up (May 1) to October 1 the following year.

## Specification MT548-4

**TABLE 1. Guide To Mechanical Treatment Selection by Dominant Range Site** <sup>1/</sup>

Vegetation or Soil Problem	Rangeland Ecological Site						
	Claypan	Clayey	Dense Clay <sup>2/</sup>	Silty	Shallow	Sandy	Overflow
Blue grama and clubmoss sod	A4, A2, A1, A3, C1, C2, D1, D2	A3, A2, A1, B1, B2, D1, D2	N/A	A3, A2, A1, B1, B2, D1, D2	A3, A2, A1, B1, B2, D1	A3, A2, A1, D1, D2	A1, A2, A3, A4, D1, D2
Claypan	A4, A2, A1, A3, C1, C2, D1, D2	N/A	N/A	N/A	N/A	N/A	N/A
Surface layer compaction less than 8 inches deep	A3, A2, A1, B1, B2, D1,	A3, A2, A1, B1, B2, D1, D2	A2, A1, C1, C2	A3, A2, A1, B1, B2, D1, D2	A3, A2, A1, B1, B2, D1	A3, A2, A1, D1, D2	A2, A1, A3, D1
Subsoil compaction greater than 8 inches deep	A4, C1, C2, E	A4, C1, C2, D1, D2	N/A	A4	N/A	N/A	A4, D1
Weedy or barren areas	C1, D2, D1	D1, D2, B1, C1, A2, A3, A1	A2, A1, C1	D1, D2, B1, C1	B1, C1, D1, D2	D1, D2	A2, A3, D1, D2

<sup>1/</sup> Treatments should be selected based on ecological site and condition, planned grazing system, available equipment, and benefit/cost ratio. The order of listed options may be changed based on local conditions.

<sup>2/</sup> Dense clay sites are not highly productive, so improved grazing management may be the best economical option for site improvement.

### Treatment A: Chiseling at 4 to 6 inch depth.

No.	Equipment	No. of Operations
A1	Straight shanks	2
A2	Twisted shanks	2
A3	6-inch shovels (sweeps)	1
A4	Deep chiseling 6-10 inches	2

### Treatment B: Contour scalping at 2 to 4 inch depth.

No.	Treatment
B1	Interseeded
B2	Not interseeded

### Treatment C: Contour furrowing at 4 to 10 inches.

No.	Treatment
C1	Interseeded
C2	Not interseeded

### Treatment D: Renovation and seeding.

No.	Treatment
D1	Two operations with chisel, then third with drill attached
D2	Disk plow and seed

### Treatment E: Deep Ripping at 10–20 inches.